I CLAIM:

1. A controlled droplet-formed layered structure, comprising:

a substrate,

at least two controlled droplet-formed layers, each further comprising an array of controllably-placed material volumes having a thickness extent, each material volume having a selected magnitude in the range of about 25 to about 1000 microns and a selected position relative to adjacent material volumes, said array being formed by deposition of droplets of selected volume at selected locations with respect to one another.

2. The laminate of claim 1, wherein selected material volumes in at least one of the controlled droplet-formed layers are formed of different material than other material volumes in said droplet-formed layer, whereby the controlled droplet-formed layer comprises at least two differing materials.

3. A controlled droplet-formed layered structure, comprising:

a substrate,

at least two controlled droplet-formed layers, each further comprising an array of controllably-placed material volumes having a thickness extent, each material volume having a selected magnitude and a selected position relative to adjacent material volumes, said array being formed by deposition of droplets of selected volume at selected locations with respect to one another,

wherein selected material volumes in at least one of the droplet-formed layers are of different magnitude than other material volumes in the droplet-formed layer.

4. A controlled droplet-formed layered structure, comprising:

a substrate,

at least two controlled droplet-formed layers, each further comprising an array of controllably-placed material volumes having a thickness extent, each material volume having a selected magnitude and a selected position relative to adjacent material volumes, said array being formed by deposition of droplets of selected volume at selected locations with respect to one

PCT/US 98/25875
IPEA/US 08 DEC 1999

another,

wherein the substrate comprises a controlled droplet-formed layer of material.

5. The laminate of claim 1, wherein the controlled droplet-formed layer is discontinuous and comprises an array of material volumes, wherein at a first selected location a material volume overlays the substrate and at a second selected location a material volume does not overlay the substrate.

6. The laminate of claim 1, wherein the first and second controlled droplet-formed layers comprise layers of a product selected from the following group: a film formed by depositing successive layers, a label having a plurality of layers, and a tape.

7. (Amended) A process for forming a laminate structure of which each layer has a controlled structure and a controlled materials composition within each layer, comprising:

a) providing a first material that can be formed into droplets;

b) providing a substrate upon which droplets of the first material can be deposited;

c) forming an individual droplet of the first material having a controlled volume;

d) projecting the droplet through the atmosphere to a desired location on the substrate in a controlled way;

e) providing a second material that can be formed into droplets;

f) providing a substrate upon which droplets of the second material can be deposited, wherein the first material can form at least a part of the substrate upon which the second material is deposited;

g) forming an individual droplet of the second material having a controlled volume;

h) projecting the droplet through the atmosphere to a desired location on the substrate in a controlled way;

i) repeating steps of the process as required until the structure is formed, wherein previously deposited droplets form at least part of the substrate for further droplet deposition.

PCT/US 98/25875
IPEA/US 08 DEC 1999

35

8. The process of claim 7, wherein at least one of the layers comprising the substrate and the first material and the second material layers is a pressure-sensitive adhesive.

9. A controlled droplet-formed layered structure incorporating a pressure sensitive adhesive layer , comprising:

a substrate,

at least two controlled droplet-formed layers, each further comprising an array of controllably-placed material volumes having a thickness extent, each material volume having a selected magnitude and a selected position relative to adjacent material volumes, said array being formed by projecting droplets through the atmosphere of selected volume at selected locations with respect to one another.

10. The controlled droplet-formed layered structure of claim 9, wherein the controlled droplet formed structure comprises a pressure-sensitive adhesive label.

11. The laminate of claim 1, wherein the substrate is a material selected from the group consisting of:

film;

paper; and

plastic.

12. The laminate of claim 1, wherein each material volume has a selected magnitude of about 15 to 500 microns in diameter.

13. The process of claim 7, wherein the substrate upon which droplets of the first material can be deposited comprises a material selected from the group consisting of:

film;

paper; and

plastic.

PCT/US 98/25875
IPEA/US 08 DEC 1999

14. The controlled droplet-formed layered structure of claim 9, wherein the substrate is a material selected from the group consisting of:

film;

paper; and

plastic.